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(71) Applicant(s)
John Harold Jonas
Oakrise Model Farm, Crockham Hill, EDENBRIDGE, Kent, TN8 6SR, United Kingdom

(72) Inventor(s)
John Harold Jonas

(74) Agent and/or Address for Service
Brookes & Martin
High Holborn House, 52-54 High Holborn, LONDON, WC1V 6SE, United Kingdom

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A4S S1F S1G
B7C CGX

(56) Documents Cited
GB 2193171 A GB 2139506 A GB 2132682 A
GB 2007502 A GB 0183003 A WO 82/02364 A1
WPI Abstract Accession No 90-115776/15 & WO 90/02505 A1

(58) Field of Search
UK CL (Edition N) A4S , B7C CGX CKD
Online: WPI

(54) Movement inducing apparatus for pram or pushchair based on mat with undulating surface or wheel or attachment therefor with varying radius

(57) An apparatus for inducing rocking and/or movement sensation to a pram or pushchair comprising means to vary the distance between the axle and the ground as the wheel of the pram or pushchair rotates. The means may comprise a surface (11, figure 1) situated on the ground having a varying profile (12 - 14, Figure 1) so that up and down motion is imparted to the pram as a wheel is wheeled along the surface. Alternatively the means may comprise wither a wheel of different radii around its circumference or means (21 and 24, Figure 3A) engagable with the wheel so as to provide a varying effective radius around the circumference of the wheel.

The rocking and/or motion sensation encourages a baby to sleep.

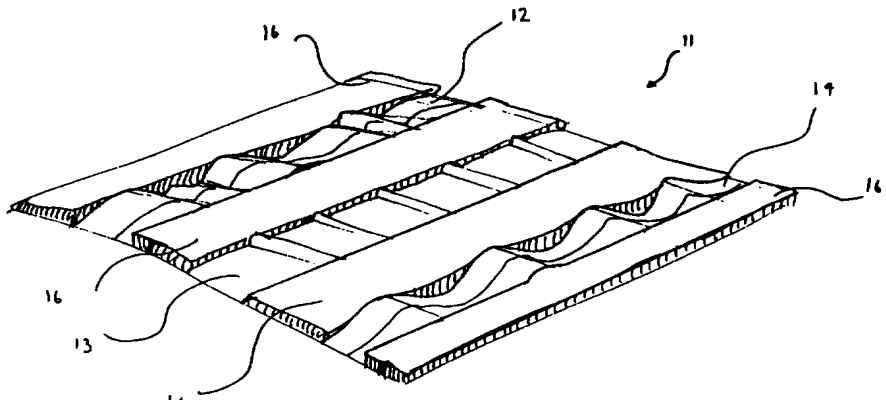

FIGURE 1

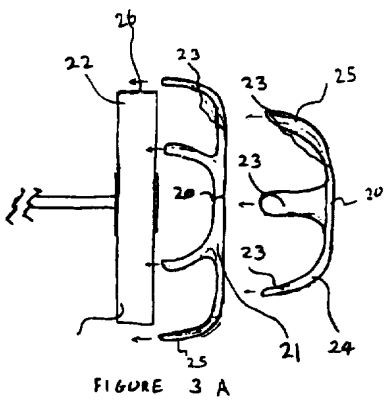

FIGURE 3 A

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

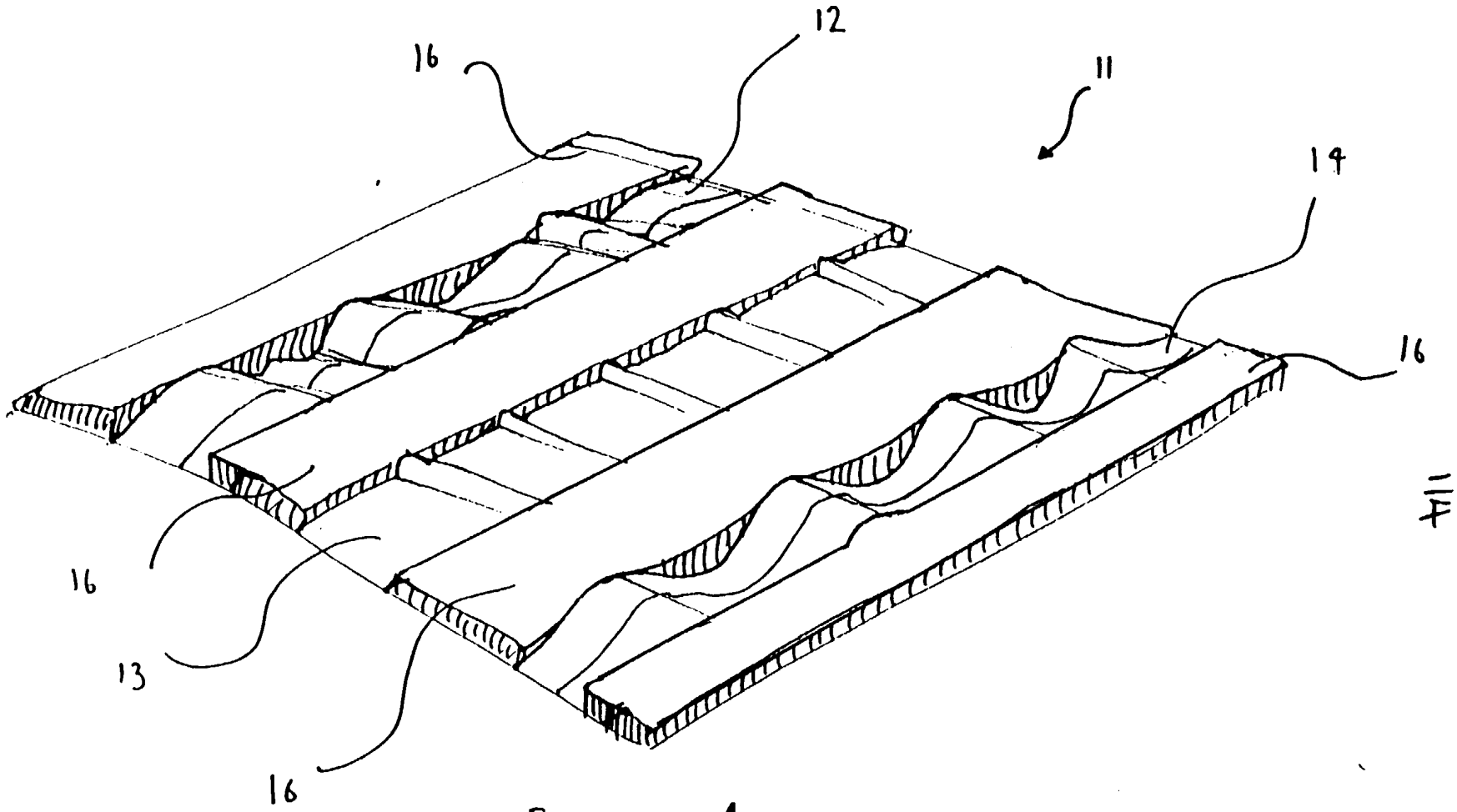

FIGURE 1

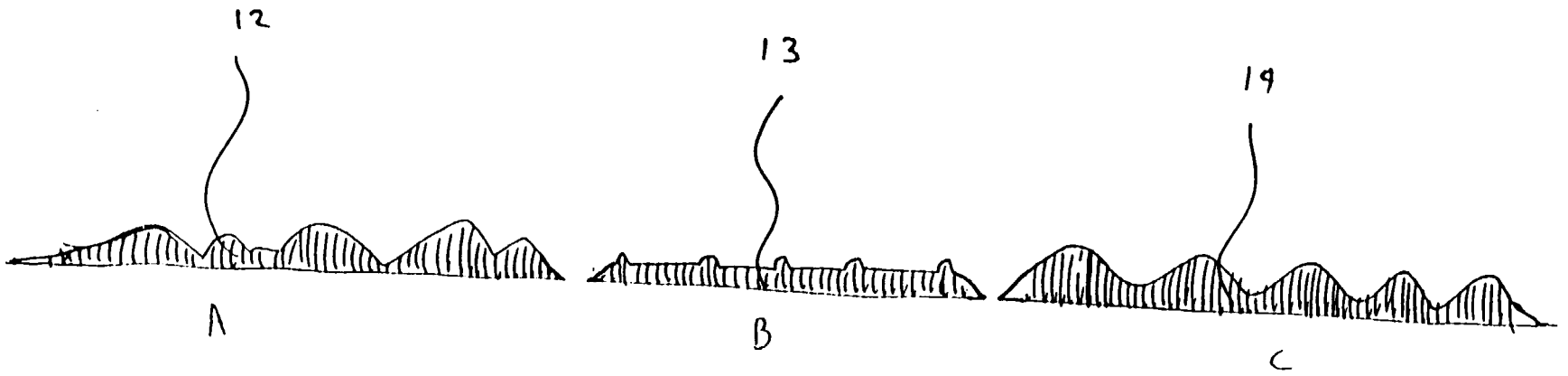

FIGURE 2

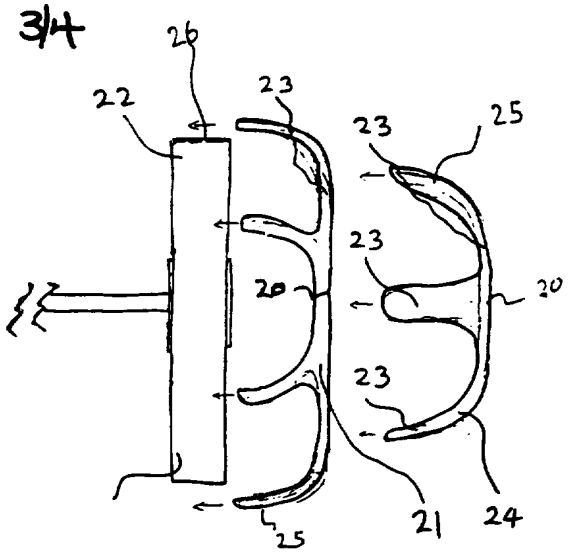

FIGURE 3 A

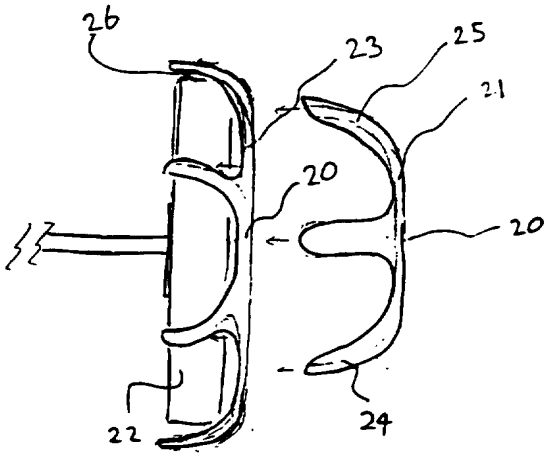

FIGURE 3 B

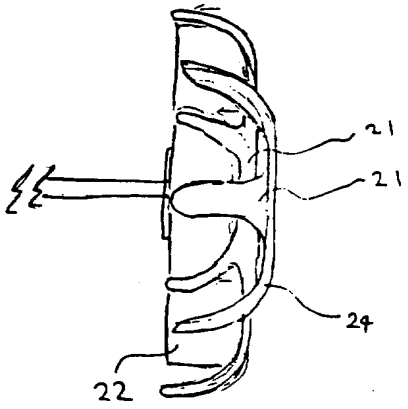

FIGURE 3C

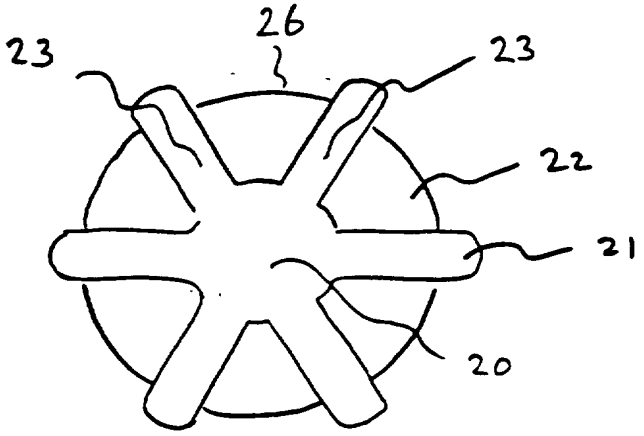

FIGURE 4A

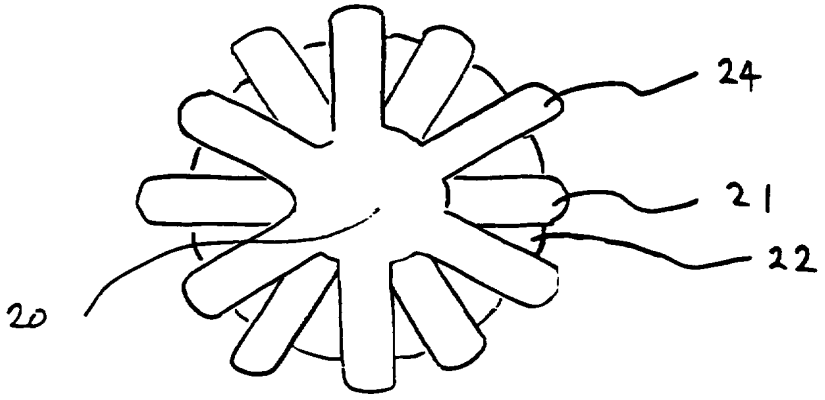

FIGURE 4B

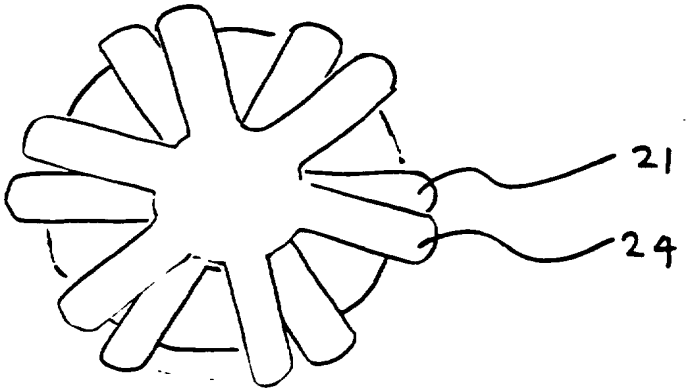

FIGURE 4C

MOVEMENT INDUCING APPARATUS

This invention relates to movement inducing apparatus. more specifically the invention relates to a means and method for encouraging babies to sleep by simulating patterns of rocking and/or motion that would normally comfort and quieten a baby.

It is recognised by the medical profession and from the experience of parents that babies tend to go to sleep more easily when being moved or rocked. for example. when being pushed in a pram or pushchair along a country walk or being driven in a car journey. Not everyone has access to a country walk or likes to push the baby along a noisy street or crowded pavements or take the baby in the car. Nor is it practical at night or on the upper floors of a block of flats.

It would be desirable to simulate the rocking or motion sensations that are produced when a pushchair or pram is pushed over a variety of different surfaces. for instance. regular concrete pavings. a rough pavement or a bumpy country path.

According to a first aspect of the invention there is provided apparatus for inducing rocking and/or movement sensation to a pram or pushchair. said pram or pushchair having a wheel rotatably mounted on an axle. said apparatus comprising means to vary the distance between the axle and the ground as the wheel rotates.

In one case the means may comprise a surface which may be situated on the ground and having a varying profile so that the up and down motion is imported to the pram as the wheel is wheeled along the surface.

In another arrangement. the means may comprise either a wheel of different radii around its circumference or means connected to the wheel so as to provide a varying effective radius around the circumference of the wheel so that an up and down motion is imported to the pram as the wheel rotates.

According to a second aspect of the invention there is provided

apparatus for inducing rocking and/or motion sensation to a pram or pushchair comprising an upper surface having a substantially non-flat elongate profile whereby motion sensation is induced to the pram or pushchair by pushing and pulling the pram or pushchair over the upper surface.

Advantageously, the apparatus is in the form of a mat and more advantageously, the mat is made of a flexible material.

Preferably the upper surface has at least one path defined in it and more preferably still said profile comprises a repeating pattern.

It may be that the path follows a generally straight line. Advantageously, said profile is sinusoidal or comprises random bumps or corrugations or ribbed mouldings.

The apparatus may comprise two or more paths. The paths may preferably comprise different non-flat profiles.

Advantageously said path or paths are wide enough to engage one wheel of a pram or pushchair and more advantageously still the apparatus may further comprise portions raised from the upper surface on either side of the non-flat paths adapted so that a pushchair or pram wheel is guided along the paths.

According to a third aspect of the invention, there is provided apparatus for inducing rocking and/or movement sensation to a pram or pushchair providing a wheel having different radii at different points around the circumference. Whilst it is envisaged that one may replace a normal wheel with a wheel of this type, we preferably provide means for attachment to the existing wheel of the pram or pushchair to provide variation of radius. This apparatus may be mountable to the wheel and comprise protrusions providing the variation in radius.

According to a further aspect of the invention, there is provided a

method of encouraging a baby to sleep comprising the steps of :

1. providing apparatus for simulating rocking and/or motion sensation comprising an upper surface having a substantially non-flat profile. and

2. pushing and pulling a pram containing a baby over the upper surface.

In order to promote a fuller understanding of the above and other aspects of the present invention an embodiment will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 shows an embodiment of the invention in perspective;

Figures 2A. 2B and 2C are cross-sections of three different profiles respectively;

Figures 3A to 3C show a side view of a second embodiment of the invention: and

Figures 4A to 4C show an end view of a pram wheel having the second embodiment of the invention attached.

Referring to Figure 1 there is shown a rectangular mat 11 having discrete paths 12 to 14 formed on an upper surface. The paths shown are substantially parallel and run from one side of the mat 11 to the other. Between each of the paths 12 to 14 is a raised portion 16. The raised portion 16 is on average higher than any of the paths 12 to 14 so that the raised portion 16 may act as a guide for a pram or pushchair wheel.

The path 12 is a substantially randomly varying pattern running from one end of the mat 11 to the other. It simulates an essentially smooth

but a randomly varying motion. Path 13 comprises ribs formed along the path in spaced relation. it has the effect of inducing regular but small vibrations on the pram or pushchair. Path 14 is a regular sinusoidal varying surface. Typical cross-sections of the randomly varying path 12, the rib surface path 13 and the sinusoidally varying path 14 are shown in Figures 2A, 2B and 2C respectively.

In use the wheels on one side of a pushchair are aligned with a particular path and the pushchair or pram is pushed from one end of the path to the other so that the wheels or wheel moves over the shaped surface. The motion over the shaped surface sends vibrations through the pram which are experienced by the passenger, typically a small child or baby. These vibrations are found to be comforting and encourage the baby or child to go to sleep. The mat is made of a flexible material so that it is light and may be folded or rolled up for easy storage. for example. foam type rubber or plastic material would be suitable.

Although the embodiment shows three paths having different surface profiles, one. two or more than three paths could be formed in such a mat.

Typically the mat should be a manageable size, for example, 60 cm by 60 cm would be adequate to achieve the desired effect.

Alternatively, one could have a variety of paths end to end in a strip.

Another embodiment will now be described with reference to Figures 3A to 3C and 4A to 4C. Collar means 21 comprises a central circular body 20 from which extends a plurality of radial arms 23. the radial arms 23 extending. in use. parallel to the side face of a wheel 22 to the rim 26 of the wheel. Each arm 23 terminates in a finger portion 25 which extends generally at right angles to the arms 23 across the rim 26 of the wheel. The collar means is formed so that the finger portions 25 resiliently engage the rim. and is typically made from a plastic

material. Effectively the fingers form a discontinuous collar around the circumference of the wheel. Thus the wheel has effectively a first radius where the wheel itself engages the ground and a second greater radius where the finger portions 25 engage the ground. Figure 3B and Figure 4A show the collar means 21 engaged over the wheel 22.

In this embodiment the collar means 21 has six arms but three or more arms would function in the same manner.

A second collar means 24 may fit over the top of the collar means 21 and engage the wheel 22 whereby the arms and fingers of the second collar means 24 are interposed between the arms and fingers of the collar means 21. This is illustrated in Figures 3C. 4B and 4C where the second collar means is clamped over the top of the collar means 21 onto the wheel 22 of the pram. The first collar means 21 and the second collar means 24 may be rotated with respect to each other so that the relative angular positions of the first and second radii are varied. For instance. in one arrangement. the first collar means 21 and the second collar means 24 may be spaced equally apart (Figure 4B) to produce an up and down motion twice the frequency of the collar means 21 on its own. Alternatively, they may be positioned together (Figure 4C) to produce a more prolonged vibration than the collar means 21 on its own. or slightly apart for a heart beat type of double vibration.

Motion may be induced to the pram with a single set of collar means attached to the wheel of the pram. but equally two or more sets of collar means may be attached to two or more respective opposite or adjacent wheels to induce motion to the pram when it is moved backwards and forwards.

In both the first and second embodiments the variation in height of the wheel as it rotates induces a generally up and down motion to the pram. However. a side to side component of motion is also induced when wheels on opposite sides move along varying heights. The mat of the first

embodiment and the sets of collar means of the second embodiment may be adapted to maximise this effect.

CLAIMS

1. An apparatus for inducing rocking and/or movement sensation to a pram pushchair or the like, said pram or pushchair having a wheel mounted on an axle, said apparatus comprising means to vary the distance between the axle and the ground as the wheel rotates.

2. An apparatus according to Claim 1 wherein the means comprises a surface which may be situated on the ground and having a varying profile so that the up and down motion is imparted to the pram as the wheel is wheeled along the surface.

3. An apparatus according to Claim 1 wherein the means comprises a wheel of different radius at different points around the circumference.

4. An apparatus according to claim 1, wherein the means is connectable to the wheel so as to provide a varying effective radius at different points around the circumference of the wheel so that an up and down motion is imparted to the pram as the wheel rotates.

5. An apparatus for inducing rocking and/or motion sensation to pram, pushchair or the like, comprising an upper surface having a substantially non-flat elongated profile whereby motion sensation is induced to the pram or pushchair by pushing and pulling the pram or pushchair over the upper surface.

6. An apparatus according to Claim 4 whereby the apparatus is in the form of a mat.

7. An apparatus according to Claim 5 whereby the mat is made of a flexible material.

8. An apparatus according to Claims 4,5 and 6 whereby the upper surface has at least one path defined on it.

9. An apparatus according to any one of Claims 5 to 7, whereby said profile comprises a repeating pattern.

10. An apparatus according to Claim 7, whereby said path follows a generally straight line.

11. An apparatus according to any one of Claims 5 to 9, whereby said profile is sinusoidal or comprises random bumps or corrugations or ribbed mouldings.

12. An apparatus according to any of Claims 5 to 10 whereby the apparatus comprises two or more paths.

13. The apparatus of Claim 11 whereby the paths preferably comprise different non flat profiles.

14. The apparatus according to Claim 12, whereby said paths are wide enough to engage one wheel of a pram or pushchair.

15. The apparatus as claimed in Claim 12 or 13 whereby said apparatus further comprises portions raised from the upper surface on either side of the long flat paths adapted so that a pushchair or pram wheel is guided along the paths.

16. An apparatus for inducing rocking and/or movement sensation to a pram or pushchair providing a wheel having different radii at different points around the circumference.

17. An apparatus according to Claim 15 whereby said apparatus comprises

means for attachment to the existing wheel of a pram or pushchair to provide variation of radius of the wheel about its circumference.

18. An apparatus according to Claim 16 whereby said apparatus may be mounted on the wheel and comprises protrusions providing the variation in radius.

19. A method of encouraging a baby to sleep comprising the steps of:

1) providing apparatus for simulating rocking and/or motion sensation comprising an upper surface having a substantially non-flat profile, and

2) pushing and pulling a pram containing a baby over the upper surface.

20. Movement inducing apparatus substantially as hereinbefore described with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

21. Movement inducing apparatus substantially as hereinbefore described with reference to and as illustrated in Figures 3a, 3b, 3c, 4a, 4b and 4c of the accompanying drawings.

Patents Act 1977 10 Examiner's report to the Comptroller under Section 17 (The Search report)	Application number GB 9500040.2
Relevant Technical Fields (i) UK Cl (Ed.) A4S; B7C (CGX, CKD) (ii) Int Cl (Ed.)	Search Examiner MR S J QUICK Date of completion of Search 20 DECEMBER 1995
Databases (see below) (i) UK Patent Office collections of GB, EP, WO and US patent specifications. (ii) ONLINE: WPI	Documents considered relevant following a search in respect of Claims :- 1-21

Categories of documents

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Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
A	GB 2193171 A	(L F CHUANG) see Figure 5	1 and 16 at least
X	GB 2139506 A	(DENDIX GEM BRUSHES) see especially Figure 1	1 and 5 at least
X	GB 2132682 A	(BRITISH ALUMINIUM) see especially Figure 1, regions 7 and 23	1 and 5 at least
X	GB 2007502 A	(RUNE KARLSSON) see especially Figure 2	1 and 5 at least
X	GB 0183003 A	(S E PAGE) see especially Figures 1-3	1 and 5 at least
A	WO 82/02364 A1	(BENASSI BOATS PTY) especially Figure 1	1 and 16 at least
A	WPI Abstract Accession No. 90-115776/5 and WO 90/02505 A1 (SOCRIMA) see Abstract		19

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